

## ABSTRACT OF THE DISCLOSURE

A method for removing motion artifacts from devices for sensing bodily parameters and apparatus and system for effecting same. The method includes analyzing segments of measured data representing bodily parameters and possibly noise from motion artifacts. Each segment of measured data may correspond to a single light signal transmitted and detected after transmission or reflection through bodily tissue. Each data segment is frequency analyzed to determine up to three candidate peaks for further analysis. Each of the up to three candidate frequencies may be filtered and various parameters associated with each of the up to three candidate frequencies are calculated. The best frequency, if one exists, is determined by arbitrating the candidate frequencies using the calculated parameters according to predefined criteria. If a best frequency is found, a pulse rate and SpO<sub>2</sub> may be output. If a best frequency is not found, other, conventional techniques for calculating pulse rate and SpO<sub>2</sub> may be used. The above method may be applied to red and infrared pulse oximetry signals prior to calculating pulse rate and/or pulsatile blood oxygen concentration. Apparatus and systems disclosed are configured to perform methods disclosed according to the invention.